

**IN THE CLAIMS:**

Please cancel Claims 1-217, without prejudice, and add new Claims 218-268 as follows:

1.-217. (Canceled)

218. (New) A method for determining susceptibility of a HCMV (human cytomegalovirus) for an anti-viral drug comprising:

- (a) culturing a host cell in the presence of the anti-viral drug, wherein the host cell has introduced thereto a resistance test vector comprising: (1) a patient-derived segment that comprises an HCMV gene, and (2) an indicator gene, wherein the expression of the indicator gene is dependent upon the patient-derived segment;
- (b) measuring the expression of the indicator gene in the host cell; and
- (c) comparing the expression of the indicator gene measured in (b) to the expression of indicator gene measured in a corresponding host cell, cultured in the absence of the anti-viral drug, having introduced thereto a corresponding resistance test vector comprising: (1) a patient-derived segment that comprises a HCMV gene, and (2) an indicator gene, wherein the expression of the indicator gene is dependent upon the patient-derived segment,

wherein greater expression of the indicator gene in the absence of the anti-viral drug relative to that measured in the presence of the anti-viral drug indicates susceptibility of the HCMV for the anti-viral drug.

219. (New) The method of claim 218 wherein the resistance test vector comprises DNA of a genomic viral vector.

220. (New) The method of claim 218 wherein the resistance test vector comprises DNA of a subgenomic viral vector.

221. (New) The method of claim 218 wherein the resistance test vector comprises DNA encoding phosphotransferase (UL 97), DNA polymerase (UL54), protease (UL80), UL54, UL44, UL57, UL105, UL102, UL70, UL114, UL98, or UL84.

222. (New) The method of claim 218 wherein the patient-derived segment comprises a functional viral sequence.
223. (New) The method of claim 218 wherein the patient-derived segment encodes one protein that is the target of an anti-viral drug.
224. (New) The method of claim 218 wherein the patient-derived segment encodes two or more proteins that are the target of an anti-viral drug.
225. (New) The method of claim 218 wherein the indicator gene is a functional indicator gene and the host cell is a resistance test vector host cell including the additional step of infecting the target host cell with resistance test vector viral particles.
226. (New) The method of claim 218 wherein the indicator gene is a non-functional indicator gene.
227. (New) The method of claim 218 wherein the host cell is a packaging host cell or a resistance test vector host cell.
228. (New) The method of claim 227 wherein the culture is by co-cultivation.
229. (New) The method of claim 228 wherein the host cell is infected with a resistance test vector viral particle from said packaging host cell or resistance test vector host cell.
230. (New) The method of claim 218 wherein the indicator gene is a luciferase gene.
231. (New) The method of claim 218 wherein the indicator gene is a  $\beta$ -lactamase gene.
232. (New) The method of claim 227 wherein the packaging host cell or resistance test vector host cell is a human cell.
233. (New) The method of claim 227 wherein the packaging host cell or resistance test vector host cell is a human foreskin fibroblast cell.

234. (New) The method of claim 227 wherein the packaging host cell or resistance test vector host cell is a MRC5 cell.
235. (New) The method of claim 218 wherein the host cell is a human embryonic lung cell.
236. (New) A resistance test vector comprising a patient-derived segment which comprises a betaherpesvirinae gene and an indicator gene.
237. (New) The resistance test vector of claim 236 wherein the patient-derived segment comprises one gene.
238. (New) The resistance test vector of claim 236 wherein the patient-derived segment comprises two or more genes.
239. (New) The resistance test vector of claim 236, wherein the betaherpesvirinae gene is an HCMV gene.
240. (New) The resistance test vector of claim 236 wherein the indicator gene is a functional indicator gene.
241. (New) The resistance test vector of claim 236 wherein the indicator gene is a non-functional indicator gene.
242. (New) The resistance test vector of claim 236 wherein the indicator gene is a luciferase gene.
243. (New) A packaging host cell transfected with a resistance test vector comprising a patient-derived segment which comprises a betaherpesvirinae gene and an indicator gene.
244. (New) The packaging host cell of claim 243 that is a mammalian host cell.
245. (New) The packaging host cell of claim 243 that is a human host cell.

246. (New) The packaging host cell of claim 243 that is a human embryonic lung cell.
247. (New) The packaging host cell of claim 243 that is an MRC5 cell.
248. (New) The packaging host cell of claim 243 that is a human foreskin fibroblast cell.
249. (New) The packaging host cell of claim 243, wherein the betaherpesvirinae gene is an HCMV gene.
250. (New) A method for determining susceptibility of a HCMV (human cytomegalovirus) for an anti-viral drug comprising:
- (a) culturing a host cell in the presence of the anti-viral drug, wherein the host cell has introduced thereto a resistance test vector comprising: (1) a patient-derived segment that comprises an HCMV gene, and (2) a nonfunctional indicator gene, wherein the expression of the indicator gene is dependent upon the patient-derived segment;
  - (b) measuring the expression of the indicator gene in the host cell; and
  - (c) comparing the expression of the indicator gene measured in (b) to the expression of indicator gene measured in a corresponding host cell, cultured in the absence of the anti-viral drug, having introduced thereto a corresponding resistance test vector comprising: (1) a patient-derived segment that comprises a HCMV gene, and (2) an indicator gene, wherein the expression of the indicator gene is dependent upon the patient-derived segment,
- wherein greater expression of the indicator gene in the absence of the anti-viral drug relative to that measured in the presence of the anti-viral drug indicates susceptibility of the HCMV for the anti-viral drug.
251. (New) The method of claim 250 wherein the resistance test vector comprises DNA of a genomic viral vector.
252. (New) The method of claim 250 wherein the resistance test vector comprises DNA of a subgenomic viral vector.

253. (New) The method of claim 250 wherein the resistance test vector comprises DNA encoding phosphotransferase (UL 97), DNA polymerase (UL54), protease (UL80), UL54, UL44, UL57, UL105, UL102, UL70, UL114, UL98, or UL84.
254. (New) The method of claim 250 wherein the patient-derived segment encodes one protein.
255. (New) The method of claim 250 wherein the patient-derived segment encodes two or more proteins.
256. (New) The method of claim 250 wherein the indicator gene is a luciferase gene.
257. (New) The method of claim 250 wherein the host cell is a packaging host cell.
258. (New) The method of claim 257 wherein the packaging host cell is a human cell.
259. (New) The method of claim 257 wherein the packaging host cell is a human embryonic lung cell.
260. (New) The method of claim 257 wherein the packaging host cell is a human foreskin fibroblast.
261. (New) The method of claim 250 wherein the nonfunctional indicator gene comprises a permuted promoter.
262. (New) The method of claim 250 wherein the nonfunctional indicator gene comprises a permuted coding region.
263. (New) A method of determining anti-viral drug resistance of a HCMV in a patient, comprising:
- (a) determining susceptibility of the HCMV in the patient to said anti-viral drug by:
    - (i) culturing a host cell in the presence of said anti-viral drug, wherein the host cell has introduced thereto a resistance test vector comprising:
      - (1) a patient-derived segment that comprises a HCMV gene, and (2) an

indicator gene, wherein the expression of the indicator gene is dependent upon the patient-derived segment; and

- (ii) measuring expression of the indicator gene in said host cell; and
- (b) comparing the susceptibility of the HCMV in the patient to said anti-viral drug determined in step (a) with a standard curve of drug susceptibility for the anti-viral drug,

wherein susceptibility which is decreased relative to that shown by the standard curve indicates anti-viral drug resistance of the HCMV in the patient.

264. (New) A method of determining anti-viral drug resistance of a HCMV in a patient, comprising:

- (a) determining susceptibility of the HCMV in the patient to said anti-viral drug by:
  - (i) culturing a host cell in the presence of said anti-viral drug, wherein the host cell has introduced thereto a resistance test vector comprising:
    - (1) a patient-derived segment that comprises a HCMV gene, and (2) a nonfunctional indicator gene, wherein the expression of the indicator gene is dependent upon the patient-derived segment; and
  - (ii) measuring expression of the indicator gene in said host cell; and
- (b) comparing the susceptibility of the HCMV in the patient to said anti-viral drug determined in step (a) with a standard curve of drug susceptibility for the anti-viral drug,

wherein susceptibility which is decreased relative to that shown by the standard curve indicates anti-viral drug resistance of the HCMV in the patient.

265. (New) A method of determining anti-viral drug resistance of a HCMV in a patient, comprising:

- (a) determining susceptibility of the HCMV in the patient to said anti-viral drug at a first time point by:
  - (i) culturing a host cell in the presence of said anti-viral drug, wherein the host cell has introduced thereto a resistance test vector comprising
    - (1) a patient-derived segment that comprises a HCMV gene, and (2) an indicator gene, wherein the expression of the indicator gene is dependent upon the patient-derived segment; and

- (ii) measuring expression of the indicator gene in said host cell;
  - (b) determining, by the method of step (a), the susceptibility of the HCMV in the patient to said anti-viral drug at a second time point; and
  - (c) comparing the susceptibility of the HCMV in the patient to said anti-viral drug at the first time point and the susceptibility of the HCMV in the patient to said anti-viral drug at the second time point,
- wherein a decrease in susceptibility to said anti-viral drug at the second time point relative to that at the first time point indicates anti-viral drug resistance of the HCMV in the patient.

266. (New) A method of determining anti-viral drug resistance of a HCMV in a patient, comprising:

- (a) determining susceptibility of the HCMV in the patient to said anti-viral drug at a first time point by:
  - (i) culturing a host cell in the presence of said anti-viral drug, wherein the host cell has introduced thereto a resistance test vector comprising (1) a patient-derived segment that comprises a HCMV gene, and (2) a nonfunctional indicator gene, wherein the expression of the indicator gene is dependent upon the patient-derived segment; and
  - (ii) measuring expression of the indicator genes in said host cell;
- (b) determining, by the method of step (a), the susceptibility of the HCMV in the patient to said anti-viral drug at a second time point; and
- (c) comparing the susceptibility of the HCMV in the patient to said anti-viral drug at the first time point and the susceptibility of the HCMV in the patient to said anti-viral drug at the second time point,

wherein a decrease in susceptibility to said anti-viral drug at the second time point relative to that at the first time point indicates anti-viral drug resistance of the HCMV in the patient.

267. (New) A method for determining susceptibility of a HCMV for an anti-viral drug comprising:

- (a) contacting a host cell with the anti-viral drug, wherein the host cell comprises (1) an HCMV-derived nucleic acid and (2) an indicator gene, wherein the

expression of the indicator gene is dependent upon the patient-derived segment;

- (b) measuring the expression of the indicator gene; and
- (c) comparing the expression of the indicator gene measured in (b) to the expression of indicator gene measured in a corresponding host cell not contacted with the anti-viral drug, wherein the corresponding host cell comprises (1) an HCMV-derived nucleic acid and (2) an indicator gene, wherein the expression of the indicator gene is dependent upon the patient-derived segment,

wherein greater expression of the indicator gene in the absence of the anti-viral drug relative to that measured in the presence of the anti-viral drug indicates susceptibility of the HCMV for the anti-viral drug.

268. (New) A method of determining whether a patient infected with HCMV is likely to be susceptible to treatment with an anti-viral drug comprising:

- (a) contacting, at a first time point, a host cell with the anti-viral drug, wherein the host cell comprises (1) an HCMV-derived nucleic acid and (2) an indicator gene, wherein the expression of the indicator gene is dependent upon the patient-derived segment;
- (b) measuring the expression of the indicator gene at said first time point;
- (c) repeating steps (a) and (b) above at a second, later time point, whereby the expression of the indicator gene at said second time point is measured;
- (d) comparing the expression of the indicator gene at the first time point and the expression of the indicator gene at the second time point,

wherein a decrease in expression of the indicator gene at the second time point relative to that at the first time point indicates the patient infected with HCMV is likely to be susceptible to treatment with said anti-viral drug.